

Traditional knowledge of medicinal plants in Gindeberet district, Western Ethiopia

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Abstract

Ethiopia, is a country characterized by a wide range of climate and ecological conditions, possesses enormous diversity of fauna and flora. Semi-structured interviewees, observation and guided field walks with informants were employed to obtain ethnobotanical data in Gindeberet district, western Ethiopia. A total of 120 informants (84 males and 36 females) were selected purposefully from six sub districts. A total of 26 species of medicinal plants were collected and identified for treating 36 human ailments. The medicinal plant preparations were administered through oral, dermal and nasal routes. Oral application (33 preparations, 67.3%) was the highest and most commonly used route of application followed by dermal application (15 preparations, 30.6%). The most commonly used plant parts for herbal preparations were leaves (28%) and roots (28%) followed by barks (14%) and fruits (14%). Gindeberet district is rich in its medicinal plant composition and the associated indigenous knowledge. Evaluation of the medicinal plants for their efficacy and possible toxicity would be very important.

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1. Introduction

Ethiopia, is a country characterized by a wide range of climate and ecological conditions, possesses enormous diversity of fauna and flora (Pankhurst, 2001). The country possesses a wide range of potentially useful medicinal plants, more extensive indeed than available in many other parts of the world (Abebe, 1986; Yirga, 2010b). Popular knowledge of plants used by humans is based on thousands of years of experience. By “trial and error”, people learnt how to recognize and use plants, including those with a magic-religious function (Camejo-Rodrigues et al., 2003). Abebe (1986) estimated that 95% of traditional medical preparations in Ethiopia are of plant origin. Medicinal plants are the base for the development of new drug and the survival of till human kind as well as other livestock. Even though the traditional medical

practitioners are the best sources of information about the knowledge of the medicinal plants, it was found very difficult to obtain their traditional medicinal information as they considered their indigenous knowledge as a professional secret, only to be passed orally to their older son, at their oldest age (Jansen, 1981). However, the local indigenous knowledge on medicinal plants is being lost at a faster rate with the increase of modern education, which has made the younger generation to underestimate its traditional values. In addition the increase in population growth rate would result in the intensification of agriculture in marginal areas which would lead to deforestation with decrease in number or loss of medicinal plants in the wild (Pankhurst, 2001).

In Ethiopia little emphases has been given to traditional medicinal studies over the past decade (Hundie, 2001). There for it can be said that ethnobotanical studies are merely at the start in Ethiopia through there have been some attempts in investigating medicinal plants uses and there is as yet no in depth study on the relation between medicinal plants and indigenous knowledge on

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sustainable management of such plant resources. Modern healthcare has never been and probably never will provide for the foreseeable future adequate and equitable health service anywhere in Africa, due to the financial limitations related to rapid population growth, political instability and poor economic performance (Ankobonggo, 1992).

Due to incomplete coverage of modern medical system, shortage of pharmaceuticals and unaffordable prices of modern drugs, the majority of Ethiopian still depends on traditional medicine. The problem of ensuring the equitable distribution of modern healthcare has become more serious, as the gap between supply and demand has continued to widen. According to Demissew and Dagne (2001) there is a considerable global interest in tapping the accumulated knowledge of traditional medicine, and therefore, researches are being carried out in many countries with the aim of increasing the use of traditional medicine to the welfare of the human population. Hence, the present study was initiated to investigate the medicinal plants and traditional knowledge in Gindeberet district, Western Ethiopia.

2. Study area

The study was conducted from September 2009 to April 2010 in Gindeberet district, West Shewa Zone of Oromiya Regional State of Ethiopia (Fig. 1), between astronomical grids of 9021' to 9050' N and 37037' to 38008' E (Pedows, 1997). It is located at about 270 km from Addis Abeba, the capital city of Ethiopia. The district had an elevation ranging from 1000 to 2604 m.a.s.l. (Ema, 1988; Pedows, 1997) with a total area of about 2417.82 km². These areas are characterized by high average temperature (20–25 °C) and minimum rainfall (300–600 mm) that supports grass and woody savannah of dominant *Hyparhenia* and *Filipendula* species (Pedows, 1997 as cited in

Hunduma, 2006). The population of the district is 147,437 of which 96.3% are urban dwellers (Hunduma, 2006). Our studies focused on the sub-districts Mudhii, Kaachisii, Harbu Guba, Bidaru Gobata, Haroo Berbaboo and Mukadiima. The Oromo people mainly inhabited Gindeberet district.

3. Methods

Based on methods given by Yirga (2010b), semi-structured interviewees, observation and guided field walks with informants were employed to obtain ethnobotanical data. For this study purposive sampling was employed to identify potential informants. According to Storck et al. (1991), the size of the sample depends on the available fund, time and other reasons and not necessarily on the total population. Accordingly, a total of 120 informants (84 males and 36 females) were selected purposefully with the help of local administrators and local elderly people from six sub districts of the Gindeberet district (Table 1). Recommended traditional medicine practitioners were identified as potential informants and subsequently participated in personal interviews. Interviews were based on a checklist of questions prepared before hand in English and translated to the local language (Afan Oromo). Information regarding local names of medicinal plants, preparation methods, part(s) used, diseases treated, dosage used and route of application was recorded at the spot. Observations were made on the morphological features and habitats of each medicinal plant species in the field. Based on ethnobotanical information provided by informants, specimens were collected, numbered, pressed and dried for identification and plates of each traditional medicinal plant were collected. Mr. Teresa Tolesa interviewed the informants in Afan Oromo (local language) and collected the voucher specimens of the medicinal plants on spot.

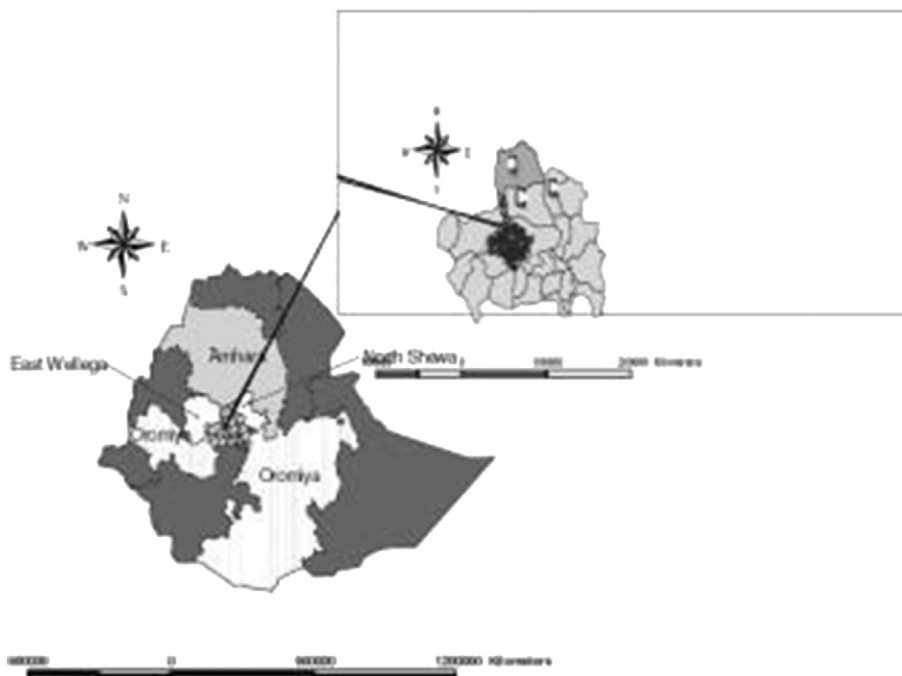


Fig. 1. Map of Ethiopia showing Gindeberet district [Source: Adapted from Hunduma, 2006].

Table 1
Sample respondent selection in Gindeberet district, Oromia Western Ethiopia.

Sub districts	Population			Sample taken			
	M	F	Total	M	F	Total	%
Mudhii Baroo	360	392	752	14	6	20	2.65
Kaachisii	345	298	643	14	6	20	3.10
Harbu Guba	375	225	600	14	6	20	3.33
Bidaru Gobata	261	194	455	14	6	20	0.43
Haroo Berbaboo	380	295	775	14	6	20	0.25
Mukadiima	296	244	540	14	6	20	3.70
Total	2017	1748	3765	84	36	120	13.46

Note: M-male, F-female.

Identification was done in the field as well as by comparison with authentic specimens, illustrations and taxonomic keys.

4. Results

The gender distribution of traditional healers was 84 (70%) and 36 (30%) for males and females, respectively and 50% were illiterate. Most of traditional healers were married (50.8%) and 71.7% were older than 46 years (Table 2). A total of 26 species of medicinal plants were collected and identified for treating 36 human ailments (Table 3). The medicinal plant preparations were administered through oral, dermal and nasal routes. However, oral application (33 preparations, 67.3%) was the highest and most commonly used route of application followed by dermal application (15 preparations, 30.6%) (Table 3). The most commonly used plant parts for herbal preparations in the area were leaves (28%) and roots (28%) followed by barks (14%) and fruits (14%). 72.5% of the healers were rural residents (Table 3).

5. Discussion

Plant diversity remains indispensable for human well being in providing a significant number of traditional and modern

Table 2
Background characteristics of respondents.

Items	Alternatives	Count	Percentage
Sex	Male	84	70
	Female	36	30
Age	26–35	17	14.2
	36–45	17	14.2
	46–55	33	27.5
	>56	53	44.2
Religions	Protestant	53	44.2
	Ethiopian Orthodox	67	55.8
Residence	Rural	87	72.5
	Urban	33	27.5
Education status	Illiterate	60	50
	1–4	33	27.5
	5–8	13	10.8
	9–12	14	11.7
Marital status	Single	29	24.2
	Married	61	50.8
	Divorced	16	13.3
	Widowed	14	11.7

remedies required in healthcare. Nearly 80% of the Ethiopian population still relies on plants to prevent and cure various health problems (Abebe and Ayehu, 1993) because of lack of certain infrastructures like hospitals and health centers. In the present study most of the traditional healers were rural residents. This is partly because modern medicinal services are either unaffordable or unavailable to the vast majority of the rural people due to their cost coupled to lack of transport to and from health care centers. The use of traditional medicine is still wide spread in Ethiopia, and its acceptability, availability and popularity is no doubt as about 90% of the populations use it for health care needs (WHO, 2002). According to Konno (2004), easy accessibility, efficacy on treatment and affordable cost in getting health services are main reasons in preferring traditional medicine to modern medication. Medicinal plants are the main, often only source of traditional medicine for the rural population and are of high demand in the health care systems of this population when compared to modern medicine. Traditional healers were found to play an important role in the primary health care system of the rural people as they treat resource people who had little access and could not afford the cost of modern medication.

The study revealed that majority of the traditional healers were older than 46 years. Very few youths were involved in the sale and administration of herbs in the study area. As in many other parts of the country the traditional healers of the district held their indigenous knowledge in secret. In Ethiopia, it is very difficult to obtain their traditional medicinal information as they considered their indigenous knowledge as a professional secret, only to be passed orally to their older son, at their oldest age (Jansen, 1981). Derogatory attitudes towards traditional medicine practitioners had forced healers to keep their knowledge and practices to themselves. The distribution of knowledge and services of medicinal plants are hierarchically placed. Most of the traditional healers are males and are married. This showed that they have family to support with the income realized from the sale and administration of the herbs.

Oral application was the highest and most commonly used route of application followed by dermal (Table 3). Abebe and Ayehu (1993) indicated oral as the main route of application used in northern Ethiopia, which accounted for 42%. Moreover, this is in agreement with the result of various ethnobotanical researchers elsewhere in Ethiopia (Balemie et al., 2004; Lulekal, 2005; Mesfin, 2007; Yirga, 2010a). Both oral and dermal routes permit rapid physiological reaction of the prepared medicines with the pathogens and increase its curative power (Mesfin, 2007). Majority (94%) of these preparations are drawn from mixtures of different plant species with different additive substances like honey, butter, oil, milk, salt, bread etc (Table 3) for the treatment of single ailment. Similar result was also reported elsewhere (Gidey, 1999; Tamene, 2000; Mesfin, 2007). Abebe (1986) has also identified the additive substances in herbal remedy preparations with their possible benefits. The most commonly used plant parts for herbal preparations in the area were roots and leaves. Previous reports in Ethiopia have shown that leaves were the most commonly used and followed by roots to treat various health problems (Bayafers, 2000; Gidey, 1999). High threat to the mother plant comes with root,

Table 3
List of medicinal plants, diseases treated, ingredients added, parts used and rout of administration of remedies.

Plant species	Family	Diseases treated	Ingredients added	Parts used	Application routes
<i>Brucea antidysenterica</i> Lam.	Simaroubaceae	Dysentery	Honey	Fruit	Oral
		Snake bite	Butter	Leaf	Dermal
		Tooth ache	Butter	Bark	Oral
		Jaundice	None	Fruit	Oral
<i>Calpurnia aurea</i> Benth.	Fabaceae	Eye disease	Leaf	Leaf	Dermal
		Snake bite	Milk	Leaf	Oral
		Vomiting	None	Root	Oral
		Stomach	None	Bark	Oral
<i>Justicia schimperiana</i> Hochst.	Acanthaceae	Gonorrhoea	<i>Croton macrostachyus</i>	Leaf	Oral
		Malaria	None	Leaf	Oral
		Rabies	<i>Brucea antidysenterica</i>	Leaf	Oral
		Headache	None	Leaf	Oral
<i>Acacia mellifera</i> Benth.	Fabaceae	Sexual incompetence of male	Root and barks of <i>Amaranthus cruentus</i>	Root	Oral
<i>Croton macrostachyus</i> Hochst	Euphorbiaceae	Skin disease	<i>Hagenia abyssinica</i>	Fruit	Dermal
<i>Embelia schimperi</i> Vatke.	Myrsinaceae	Tape worm	None	Fruit	Oral
<i>Allium sativum</i> Linn.	Alliaceae	Closed wound	None	Bark	Dermal
		Cold	Honey	Bark	Oral
		Cough	Honey	Root	Oral
		Headache	Oil	Bark	Dermal
		Malaria	<i>Girardinia diversifolia</i>	Root	Nasal
		Skin disease	<i>Girardinia diversifolia</i>	Root	Dermal
		Sour throat	None	Bark	Oral
<i>Hagenia abyssinica</i> Bruce.	Rosaceae	Tape worm	Water	Leaf	Oral
<i>Lepidium sativum</i> Linn.	Cruciferae	Male heart ache	<i>Schinus molle ginger</i>	Seed	Oral
			Honey		
<i>Catha edulis</i> Endl.	Celastraceae	Skin disease	Honey	Seed	Oral
<i>Citrus aurantifolia</i> Christm.	Rutaceae	Inflammation of lung	None	Root	Oral
<i>Phytolacca dodecandra</i> L'Hér.	Phytolaccaceae	Abortion	<i>Apodytes dimidiata</i>	Root	Oral
		Anthrax	<i>Apodytes dimidiata</i>	Root	Oral
		Itchy	<i>Apodytes dimidiata</i>	Root	Dermal
		Cold	Water	Root	Oral
<i>Ricinus communis</i> Linn.	Euphorbiaceae	Dysentery	Water	Root	Oral
		Itchy	Oil	Root	Oral
		Tape worm	Salt	Leaf	Oral
<i>Dodonaea angustifolia</i> Linn.	Sapindaceae	Tape worm	Salt	Leaf	Oral
<i>Ekebergia capensis</i> Sparrm.	Meliaceae	Cold	Salt	Leaf	Oral
<i>Eucalyptus globulus</i> Labill.	Myrtaceae	Skin diseases	None	Leaf	Dermal
<i>Capparis tomentosa</i> Lam.	Capparaceae	Evil eye	<i>Dumoga birbira</i>	Bark	Dermal
				Root	
<i>Myrsine africana</i> Linn.	Myrsinaceae	Tape warm	Injera	Seed	Oral
		To relieve menstrual	Milk	Seed	Oral
<i>Linum usitatissimum</i> Linn.	Linaceae	Dandruff	Water	Seed	Oral
<i>Englerina Woodfordioides</i> Schweinf.	Loranthaceae	Syphilis	Butteg	Seed	Oral
<i>Plantago lanceolata</i> Linn.	Plantaginaceae	Open would	Water	Leaf	Dermal
		Wart	Food	Leaf	Dermal
		Itching	Butter	Leaf	Dermal
<i>Schefflera abyssinica</i> Harms.	Araliaceae	Teeth ache	Milk	Shoot tip	Dermal
<i>Solanum incanum</i> Linn.	Solanaceae	Ear pain	None	Fruit	Dermal
		Gonorrhoea	None	Flower	Oral
<i>Trigonella polycerata</i> Linn.	Fabaceae	Skin disease	<i>Vicia faba</i>	Fruit	Dermal
			<i>Brucea antidysenterica</i>		
<i>Apodytes dimidiata</i> Meyer.	Lcacinaceae	Anthrax	<i>Phytolacca dodecandra</i>	Root	Oral
<i>Amaranthus hybridus</i> Linn.	Amaranthaceae	Jaundice	Bread	Fruit	Oral

bark and stem harvest. Medicinal plant harvest that involves roots, rhizomes, bulbs, barks and stems have serious effect on the survival of mother plants (Abebe and Ayehu, 1993). The mode of administration was mainly through oral and dermal. Gindeberet district is rich in its medicinal plant composition and the associated indigenous knowledge. Encouraging the local herbal medicinal practitioners to enhance the use of traditional

medicine and evaluation of the medicinal plants for their efficacy and possible toxicity would be very important.

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